

q. 10

Assumption

3rd Case

$$f(x+r) = \begin{cases} x^{n+1} & n \geq 1 \\ x^{n-1} & n \leq 1 \end{cases}$$

-1

$$x+r = t$$

$$x = t - r$$

$$\rightarrow f(t)$$

$$\begin{cases} t^{n-1} & t \geq r \\ f(t-r)^{n-1} & t < r \end{cases}$$

Case

$$y = \sqrt{f(x-r) - f(x+1)}$$

Case 1

$$f(x-r) - f(x+1) \geq 0$$

$$f(x-r) \geq f(x+1)$$

$$x-r \geq x+1$$

$$x \leq -1 \rightarrow D = (-\infty, -1]$$

$$f_0 f(x) < f(x^r)$$

$$f(x) < x^r$$

$$(x^r + x)^r < x^r$$

$$x^r + x < x$$

$$x^r < 0 \rightarrow x < 0$$

$$x \in (-\infty, 0)$$

$$f(x) = (x^r + x)^r$$

Case 2, f(x) = (x^r + x)^r

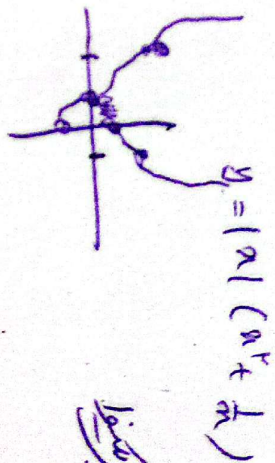
Case 3, f(x) = (x^r + x)^r

-1

$$a \cdot t \rightarrow a \cdot 0$$

$$a \in (-\infty, 0)$$

$$\frac{a < 0}{-a(a + \frac{1}{a})} \quad \frac{a > 0}{a(a + \frac{1}{a})}$$



Graph of $y = |a|(a + \frac{1}{a})$

Graph

$$f(a) = \frac{a+1}{|a| - (a+1)}$$

$$a = 0$$

$$a+1 = 0$$

$$y = \frac{a+1}{-a - (a+1)}$$

$$y = \frac{a+1}{-a - (a+1)}$$

$$y = \frac{a+1}{-a - (a+1)}$$

$$y = \frac{a+1}{-a - (a+1)} = -a-1$$

$$D_f(a) = (-\infty, -1)$$

$$(-\infty, a]$$

Graph of $y = |a|(a + \frac{1}{a})$

Graph of $y = |a|(a + \frac{1}{a})$

$$(x^T - x_n - 1)$$

$$J = \log \frac{1}{r}$$

(المشتق)

$$\rightarrow x^T - x_n - 1 \rightarrow \frac{1}{r} \frac{dx}{dx}$$

$$x_{min} = -\frac{b}{r_a} = -\frac{(-r)}{r(1)} = 1$$

$$\rightarrow (-\infty, 1]$$

$$\frac{d}{dx} \log \frac{1}{r} = \frac{1}{r} \times \frac{dr}{dx} \rightarrow (-\infty, x_{min})$$

$$a^T - x > 1 \quad M > 1 \leftarrow y = M^n$$

$$a^T > x \rightarrow a > r \rightarrow a < -r$$

الف (مشتق)

$$a^T - x \geq 1 \quad M \geq 1 \leftarrow y = M^n$$

$$a^T \geq x$$

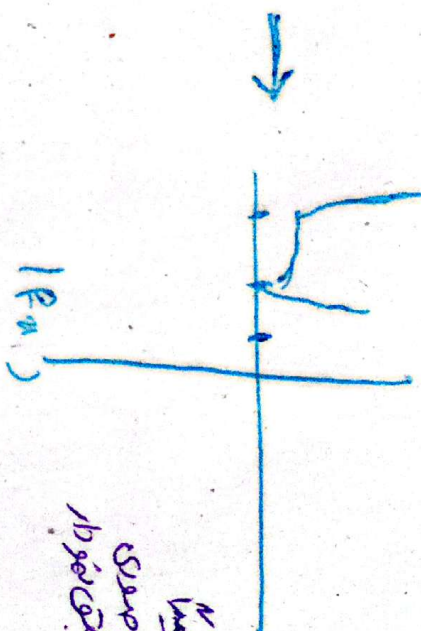
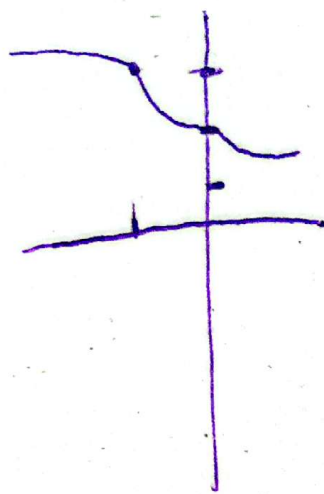
$$a \geq r, a \leq -r$$

ب (مشتق)

$$f(x) = (x+y)^r - 1$$

مقی زریطہ $(-1, 1)$ میں x کی جگہ پر y کی جگہ پر y

$$|f(x)| = |(x+y)^r - 1|$$



مقی زریطہ $(-1, 1)$ میں x کی جگہ پر y کی جگہ پر y

$$f(x) = (x+y)^r - 1 \quad x \geq 0 \quad \rightarrow \quad \sqrt{x} \geq 0 \quad \rightarrow \quad (\sqrt{x} + \frac{1}{2})^r - \frac{1}{2} \rightarrow (\sqrt{x} + \frac{1}{2})^r - \frac{1}{2} - 1 = 0$$

$$f \circ f(x) \leq f(\sqrt{x})$$

$$\rightarrow f(x) \leq \sqrt{x}$$

$$x + \sqrt{x} - 1 \leq \sqrt{x}$$

$$x - 1 \leq 0$$

$$0_1 = x \leq 1$$

$$0_2 = 1 - x \geq 0$$

$$\rightarrow D_1 \cap D_2 = \{x \mid 0 \leq x \leq 1\}$$

$$\{x \mid 0 \leq x \leq 1\}$$

مقی زریطہ $(-1, 1)$ میں x کی جگہ پر y کی جگہ پر y

$$\begin{aligned}
 & a + \sqrt{a^2 - r^2} \leq \sqrt{a^2} \\
 & a - \sqrt{a^2 - r^2} \leq 0 \\
 & 0 \leq a \leq r \\
 & D_r = [a, r] \rightarrow D_1 \cap D_r = \{0.5a \leq r\} \\
 & \text{مجموعه}
 \end{aligned}$$

$$\begin{aligned}
 & \sqrt{a \cos^2 \alpha - 1} - \sqrt{1 - a \cos^2 \alpha} \rightarrow f(\alpha) = \epsilon - \frac{1}{\epsilon} \\
 & \sqrt{a \cos^2 \alpha - 1} \rightarrow \sqrt{1 - a \cos^2 \alpha}
 \end{aligned}$$

$$\begin{aligned}
 & D_1 \cos^2 \alpha = \begin{bmatrix} a & 1 \\ 0 & 1 \end{bmatrix} \rightarrow D_1 \cos^2 \alpha = \begin{bmatrix} a & 1 \\ 0 & 1 \end{bmatrix} \rightarrow D_1 \cos^2 \alpha - 1 = \begin{bmatrix} -1 & a \\ 0 & 1 \end{bmatrix} \\
 & \min \rightarrow \sqrt{1} - \sqrt{1} = \frac{1}{\epsilon} - \sqrt{1} = -\frac{1}{\epsilon} \rightarrow R_1 = \begin{bmatrix} a & b \\ -\frac{1}{\epsilon} & \frac{1}{\epsilon} \end{bmatrix} \quad b - a = \frac{10}{\epsilon} - (-\frac{1}{\epsilon}) = \frac{11}{\epsilon} \\
 & \max \rightarrow \sqrt{1} - \sqrt{1} = \frac{1}{\epsilon} - \frac{1}{\epsilon} = \frac{10}{\epsilon}
 \end{aligned}$$

$$f(\alpha) = a - [a + r] = a - [a] - r \Rightarrow R_1 = \begin{bmatrix} -r & -1 \end{bmatrix}$$

$$R_1 R = D_1 \rightarrow g(\alpha) = \frac{r^2 - a^2}{r}$$

$$\begin{aligned}
 & -r \leq a \leq -1 \\
 & g(-1) = \frac{r^2 - a^2}{r} = \frac{1 - 1}{r} = \frac{1 - 1}{r} = -\frac{10}{r} \\
 & g(1) = \frac{r^2 - a^2}{r} = \frac{1 - 1}{r} = \frac{1 - 1}{r} = -\frac{10}{r} \\
 & R_1 g R = \begin{bmatrix} -10 & -\frac{1}{r} \end{bmatrix}
 \end{aligned}$$